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ABSTRACT

The nature and purpose of institutional research (IR), forms of research, and the function of IR in the organizational structures of colleges and universities are examined. Institutional research is defined as research conducted within a higher education institution to provide information that supports institutional planning, policy formulation, and decision-making. It is argued that IR is essential to collegiate planning or policy formation. Institutional research office benefits include a capacity to comprehend, combine, and analyze data resulting from the several operational activities of the college or university. Responsibilities of such an office include: responding to national statistical surveys or requests for data or information, contacting the state agency for higher education on matters relating to institutional data, serving on relevant statewide committees, collection and contributing to higher education periodicals, and contributing advice on planning and policy. Methods and techniques of IR are discussed in terms of the assumptions made, communications findings, research interpretation, information management, comparative analysis, data exchange, and modeling. Contribution of IR to planning, decision-making, and policy formulation are illustrated. (CC)

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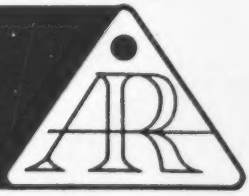
THE FUNCTIONS OF INSTITUTIONAL RESEARCH



by
Joe L. Saupe

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The author is a charter member and past president of the Association for Institutional Research (AIR). He has been an active participant in committee work, has chaired and consistently participated in the annual AIR Forum, and has provided leadership in professional development activities. In addition, he has authored two previous monographs designed to assist individuals and institutions new to institutional research.

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Preface

This monograph was sponsored by the publications board of the Association for Institutional Research. It has been reviewed by the publications board, by members of the executive committee, and by other members of the association. The contributions of these reviewers are gratefully acknowledged.

The Association for Institutional Research is an international individual-membership organization which exists to benefit, assist, and advance research leading to improved understanding, planning, and operation of institutions of postsecondary education. It offers an annual forum on institutional research, publications, and other services to members and the larger postsecondary education community. Additional information may be obtained from its executive office, the address for which is listed on the inside front cover.

The first section of the monograph is a discussion of the nature and purpose of institutional research. Several forms of the activity are described, and institutional research is compared and contrasted with other types of research. The second section describes the various ways in which the function of institutional research is included in the organizational structures of colleges and universities. Whether or not there are one or more organizational units specifically responsible for institutional research, the activity occurs in many or all units of the institution.

Offices of institutional research typically are assigned responsibilities other than research, and functions of this type are discussed in the next section of the statement. Methods and techniques of institutional research are then described. Comments on the communication of the findings of institutional research and descriptions of several special forms and methodologies of the activity are included. The final section is an outline of the potential of institutional research for contributing to planning, decision making, and policy formulation in a wide variety of areas of institutional governance.

Joe L. Saupe
University of Missouri
August 1981

The Nature and Purpose of Institutional Research

Institutional research is research conducted within an institution of higher education in order to provide information which supports institutional planning, policy formulation, and decision making. The institution may be a single campus, a multi-campus system, a state or provincial system, or an even larger grouping of colleges and universities. Although the activity of institutional research is commonly associated with the individual campus, it is carried out within higher education systems to serve the governance responsibilities which reside there.

Institutional research can be distinguished from research on higher education which has as its purpose the advancement of knowledge about and practice in higher education generally. The subject of institutional research is the individual college, university, or system, and results which have implications beyond this subject generally are not sought.

Activities of institutional research are frequently undertaken in association with specific planning, policy, or decision situations. Information to answer specific questions is desired. How many sections of a specific course should be offered? By what amount should tuition rates be increased to produce a target amount of tuition income? Is attrition a problem at our institution? Are our faculty salaries competitive with those paid by peer institutions? Institutional research designed to answer such questions is a form of *applied research*.

The assembling of the quantitative and qualitative information which underlies periodic or ad hoc reviews of programs or organizational units illustrates the form of institutional research having characteristics of *evaluation*. Information on cost and productivity underlies judgments about efficiency. Information on other characteristics of programs and units and on outcomes underlies judgments about effectiveness or quality. Information on program purposes, on programs offered by other institutions, on the labor market, and on potential demand underlies judgments about the need for academic programs. Judgments of these types lead to decisions about program initiation, continuation, and improvement.

Occasionally institutional research leads to more general information about the college or university and its environment and provides a comprehension of the institution which may inform planning, policy formulation, and decision making of a variety of types. Information of this type may arise as a by-product of institutional research on some specific question. For example, a study of student flow undertaken to guide enrollment projections may reveal that large numbers of juniors and seniors entered the institution as transfer students. This incidental finding may have a variety of implications. Similarly, institutional research may be undertaken on a general topic and not be guided by a specific problem or question with the expectation that the findings will be generally informative. For example, surveys of alumni and of members of the community in which the institution

is located may reveal attitudes and impressions about the institution. These forms of institutional research have characteristics of *basic research*.

Some activities of institutional research may, intentionally or as a by-product, identify situations within the institution which are causes for concern. A by-product of the routine tabulation of enrollment data by program or a special analysis of enrollment data designed to isolate patterns of retention and attrition may reveal that attrition appears to be a special problem for selected programs. Some form of administrative or academic attention, perhaps accompanied by additional study, may be suggested by such results. Thus, *problem identification* may be a result of institutional research.

The term research, as used here, has a broad meaning. Information about the college or university results from analyses of quantitative data and qualitative assessments. Tabular displays of counts of full-term students and of annual expenditure amounts illustrate the simplest form of analysis. Comparisons of current with prior-year totals of such data provide a similar, still simple, form of analysis which conveys information. Cost analyses, space utilization analyses, and teaching-load analyses are conventional types of institutional research. Statistical techniques ranging from the calculations of averages and percentages to the application of complex multivariate procedures are included. A variety of prior-year, current, and projected institutional data, along with quantitative representations of policy variables and assumptions, may be used to simulate institutional characteristics in future years using techniques of mathematical modeling. Simulation is a form of analysis by which implications of alternative courses of action are assessed. The measurement of student outcomes and the examination of the measures in the context of student and institutional goals and quantitative and qualitative characteristics of academic programs is another form of analysis. The performance of administrative and support programs may be similarly analyzed. Institutional research, like other types of research, should be objective, systematic, and thorough. It should be as uninfluenced as possible by matters of personal philosophy, political considerations, or desired results. The information provided by institutional research is combined with academic and professional judgment in planning and other decision-making processes. Almost never is the final decision based solely on the findings of the research, nor should it be. Considerations of institutional philosophy and tradition, of priorities, and of the environment in which the institution exists may be as important as the findings of the research in determining the course of action to be followed. For example, a study may suggest a technique of recruiting students which has considerable potential for increasing enrollment. The factors of judgment may lead to a rejection of the proposal that the technique be used or to major modification in it. Nonetheless, the research has served its purpose by bringing information to the decision-making arena and stimulating reflection about recruitment and the various factors involved in this aspect of institutional activity. The research might not have served this purpose if it

had been of questionable validity or had been guided by some preconceived notion of what result was desired or expected.

This is not to say that institutional research should be undertaken or carried out in ignorance of the nature of the institution and the forces which guide its operation. An investigation of forms of "hard-sell" recruiting, for example, would very likely not be useful in any college or university. The design and the presentation and interpretation of the findings of institutional research can be guided by the nature of the institution and its environments and the usefulness of the results thereby enhanced.

Institutional research, then, is an essential ingredient of sound college or university governance. It should occur throughout the institution, wherever any sort of planning occurs, any type of policy issue is considered, and any decision about some aspect of the institution is proposed. Institutional research has been described as an attitude of commitment to the value of the institution's purpose in society and to the value of critical appraisal and careful investigation. Institutional governance is informed and rational to the degree that such an attitude pervades the institution.

The Place of Institutional Research in the Organization

Institutional research is carried out in the individual academic and administrative units of the college or university in support of the planning and decision-making responsibilities which reside at the unit level. At some colleges and universities, a conscious decision has been made that each unit in central administration will be responsible for institutional research relating to the area of responsibility of that unit. There may be no formally identified offices for institutional research in these institutions, but this does not mean that the activity is absent. Rather, it is dispersed and carried out by persons who may have principal responsibilities other than institutional research.

At other colleges and universities, offices of institutional research have been established in recognition of the fact that the activity requires specialized expertise and full-time attention. In some cases, the title "office of institutional research" is used and connotes an activity which supports functions such as planning and budgeting wherever these occur within the institution. Elsewhere, the connection of institutional research with the activities of planning or budgeting has resulted in organizational units titled "office of institutional research and planning" or "office of institutional research and budgeting."

Various administrative units may be charged with some responsibility for institutional research. The placement of the unit within the administrative organization determines the nature of its responsibilities and the types of institutional research it undertakes.

In some colleges and universities, institutional research reports to the chief executive officer. The specific charges to such offices vary widely, but

this organizational arrangement illustrates that the function can be recognized as one of central importance and so broad that to be effective it must be placed near the top. Placement at the top may indicate that institutional research on academic, administrative, and financial matters are all important and cannot be effectively carried out in isolation one from the other.

Another model is that of an office of institutional research and planning which is responsible to a vice president for planning. Such an organization provides recognition that information developed from research underlies institutional planning. Although the name of the activity may not include the designation "institutional research" because the principal responsibility is planning, the information development phase of the activity is institutional research, nonetheless.

The office of institutional research may be a responsibility of the institution's chief academic officer in which case research and information on academic purposes, programs, policy, and personnel will support academic planning, budgeting for academic units, and other responsibilities of that officer. Such a unit may also conduct surveys of graduates and former students which will contribute to program evaluation and needs assessment studies designed to guide the development of new programs as well as respond to requests for assistance from deans, chairmen, and faculty committees.

In many colleges and universities a unit charged with leading efforts to improve instruction and academic programs has been established. Institutional research supports the activities of such a unit. Research on teaching methods and instructional media may be carried out there. Programs of student ratings of instruction are often housed in such units and are based upon research. Questions about testing and grading lead to research on *these* topics. Courses and curricula, and the interaction of students therewith, are analyzed and evaluated. Data underlying periodic reviews of programs and academic units are assembled. Evaluations of special services (for example, learning centers created to serve marginal or disadvantaged students) are carried out.

An office of student research may exist within the institution's student affairs organization and be responsible for research on campus climates and subcultures, on the characteristics of various services provided students, on residence hall life, and on factors involved in retention and attrition. The concept of market research, designed to enhance the congruence between the offerings of the college or university and the needs and expectations of its clientele, may guide the efforts of this and other types of institutional research units.

An office of financial analysis, analytical studies, or administrative research may be located within the organization of the institution's chief officer for business and finance. Studies of business operations and budget and cost analyses are likely to be principal responsibilities of such a unit, and financial planning may be based largely upon the analyses of this institutional research activity.

Recognition that data descriptive of the operation of the college or

university are assembled in various institutional operating processes has resulted in a specialized form of institutional research. Data about students are acquired as a result of admissions, registration, and associated processes. Budget building and financial transactions result in budget and accounting data. Personnel transactions generate data about employees. The translation of these various items of data into information useful to planners and decision makers requires analysis and, indeed, is a major activity of many offices of institutional research. The products of this translation and analysis have been referred to as "management information."

In colleges and universities of all sizes, computers are used to facilitate the several operating processes and to manage the data involved in these processes. What were at one time called administrative data processing systems are now called management information systems. The applicability of the new designation depends upon the degree to which the computer system, in fact, not only processes the data for operational purposes but also includes capabilities for translating the data into information. This close relationship between administrative data processing systems and management information has resulted at some colleges and universities in a close association between the administrative computing organization and the office of institutional research. In these organizational arrangements, institutional research includes participation in the preparation of specifications for information systems as well as analysis and dissemination of the information handled by the systems.

Finally, in considering the various ways in which the college or university organization may incorporate institutional research, the fact that the activity occurs within the standard organizational units bears emphasis. Information about students may be prepared in the office of admissions where research on admissions criteria may also be conducted. The office of registration and records may prepare reports and analyses of enrollment statistics and trends and may be responsible for enrollment projections. The accounting office prepares the annual report of income and expenditures which is important information for planning and decision making and may undertake analyses of trends and projections of financial variables. The physical plant or the space assignment office may be responsible for maintaining information on buildings and rooms, for the analysis of the utilization thereof, for studies of building and room accessibility for handicapped persons, and for studies which underlie energy conservation efforts. Personnel offices study employee classification systems, salary scales, and compensation policies. In a very real sense, each component of the college or university organization has a responsibility for institutional research.

A benefit of an office of institutional research should be its capacity to comprehend, combine, and analyze data resulting from the several operational activities of the college or university. The office need not be responsible for all varieties of institutional research, but it can serve as a comprehensive source for information about the institution.

Associated Responsibilities of an Institutional Research Office

By virtue of its responsibilities for data and information about the college or university, an office of institutional research will typically be assigned responsibilities which need not be considered research on the institution. The following are illustrative.

The office of institutional research is likely to have some responsibility for the institution's responses to national statistical surveys such as the Higher Education General Information Survey (HEGIS) of the National Center for Education Statistics in the United States. Similarly, the data forms which must be completed for the state or provincial agency with responsibility for higher education may be assigned to the office. The nature of such responsibilities varies. At one extreme, the office simply serves as the point of coordination, receiving the packets of forms, distributing them to other offices where they are completed, then collecting and returning them. At the other extreme, many or all of the data forms may be completed in the office of institutional research itself, drawing upon whatever data files are necessary. Even in the former case, staff in the office are likely to be—and because of their expertise, should be—called upon for assistance in interpreting the standard definitions and instructions of such surveys. They may also be asked to assist in determining how the data in the institution's files should be processed in order to produce the required figures, and in general to insure that the institutional data provided are consistent and accurate.

There are two points to be made about HEGIS and state-agency reporting. First, while there are few immediate rewards for filling out forms, the responsibility should be taken seriously. The data are collected for what may be presumed to be good reasons and should be as sound as the data assembled to serve purposes internal to the institution. The completed forms are products of the institution and, as with any institutional product, should be of high quality.

Secondly, the data on the HEGIS and state-agency forms are descriptive of the college or university and, therefore, the potential value to the institution of the data assembled for the forms should not be overlooked. A caution in this regard, however, is that the data are reported in standard categories which may detract from their utility to the institution. Counts of degrees granted for standard subject field categories are less informative to the institution than are counts arrayed by specific institutional academic units and programs. Current fund expenditure amounts displayed in standard expenditure categories are less meaningful internally than are data displayed by the cost centers of the institution. Thus, in capitalizing on the availability of data produced for the external forms, attention needs to be given to displaying the data in categories that are meaningful within the institution.

A related responsibility often assigned to the office of institutional research is that of responding to questionnaires and requests for data or

information generally. (The HEGIS and state-agency form responsibility may be considered to be a special case of this more general assignment.) Almost daily, a college or university receives some request for information from an agency of government, from the publisher of a higher education directory, from another college or university, from a doctoral student, or from some other source. Some selectivity with regard to which inquiries merit responses must be exercised and, if it is decided that a response will be given, the response should be prepared with some care. By virtue of its general responsibility for data or information on the institution, it is natural that many or all such inquiries or questionnaires be referred to the office of institutional research.

The data and information managed by the office of institutional research may be used elsewhere in the college or university for purposes other than planning, policy formulation, and decision-making. For example, the office of public information may seek data to include in press releases or publications about the institution. Similarly, general or specific data may be required to support proposals for external funding for research or other purposes, and the office of institutional research may be asked to serve as the principal source of such data and information.

The office of institutional research often provides the continuing point of contact for the state agency for higher education on matters relating to institutional data. Institutional research staff may be asked to serve on statewide committees where a central concern is institutional data. Persons from institutions provide advice on the development and refinement of state-level information systems, on state funding formulas and the data requirements for them, on studies of special issues in higher education in the state, as well as on the information required for state-level master planning. It is appropriate that the expertise of the person assigned to institutional research is often drawn upon in such endeavors.

Quite often, by virtue of background and interest, the institutional researcher will attend to the journals and books on higher education and, particularly, to the literature on research on higher education. If this person has an academic background or is so inclined for some other reason, he or she may, on occasion, contribute to this literature. While the purposes of institutional research and research on higher education differ, the two forms of research contribute one to the other. The problems, methodology, and results of the general research can be applied and particularized in institutional research, and the findings of institutional research may merit generalization through broader studies. The interest of the institutional researcher in the literature on higher education can lead to the development of a library of publications maintained in the office of institutional research but available to others, particularly administrators.

Finally, the person responsible for institutional research may be called upon to provide advice on planning, policy, and other issues facing the college or university. In one sense, this function is a natural consequence of the institutional research activity. The products of the research need to be

interpreted and their implications explained. The consequences of alternative courses of action, based upon the research, need to be described and qualified. The person who has done the research should be in the best position to describe its results and implications and to answer questions about it. When the director of institutional research participates in planning, policy formulation, and decision-making deliberations at the stage in which considerations other than those raised by the research are brought to bear, it is important to recognize that the participation is based upon the director's status as an expert on the institution and higher education rather than upon the role of researcher. The distinction suggested here may be difficult to identify in specific situations. The point is that the values and perspectives of the researcher are not identical to those of the decision maker. There is considerable merit in distinguishing the two roles. Just as the results of the research will seldom be the sole determinant of the decision, so the desired decision cannot be allowed to bias the nature of the research.

Methods and Techniques of Institutional Research

It is not within the scope of this monograph to describe or review the methods and tools of research in the social and behavioral sciences which are employed in institutional research. Numerous books describe applicable topics, such as descriptive statistics, sampling and statistical inference, questionnaire construction and survey research, experimental and quasi-experimental design, and methods of program evaluation. Not only is it beyond the range of competencies of any single individual or, even, office of institutional research to possess expertise in the full array of these methodologies, such expertise is often unnecessary since at most colleges and universities there are other qualified researchers who can be called upon to advise on or to carry out selected projects.

Some of the fundamental requirements of good research merit mention as they apply to institutional research. The first is that of *purpose*. Each activity or project of institutional research should be guided by a purpose or set of purposes stated as specifically as possible. Normally the resources available for institutional research are inadequate to justify undertaking projects because "it would be interesting to know . . ." or "it might be useful to know . . .". (To some degree, this is regrettable because what *might* be useful to know could turn out to be, in fact, *very* useful to know.) In view of the applied nature of most institutional research, the guidance given to the research effort by a purpose can be enhanced by including consideration of what actions or decisions might be made on the basis of the results of the research. For example, the initial purpose of a project might be to determine attrition rates for various types of students. This can be done, but when the question becomes, What actions might be taken as a result of knowing the rates?, the nature of the project may change. The fundamental question turns out to be, What are the characteristics of the college or university which lead to attrition and what might be done to change these characteristics?

Similarly, if the question is, What is the faculty-salary cost per student credit hour for the undergraduate courses of each department?, an analysis may provide the answer. However, the data collected and its analysis will differ depending upon whether the resulting unit costs will be used to project faculty-salary costs on the basis of projected student credit hour data or will be drawn upon in making budget decisions. If it is the latter, a more complete analysis may be needed. The linkage between institutional research and planning, policy formulation, or decision making is provided by the purposes given to the former by the requirements of the latter.

Assumptions are involved in institutional research. If, in the previous example, a unit cost is multiplied by a projected count of student credit hours to produce a future year cost estimate, an assumption is that the unit cost is not a function of department size (or of any other variable which may change between the current and projected year). There are assumptions about the meaning and accuracy—validity and reliability—of the basic data, and the researcher needs to recognize the assumptions and to point them out to the consumers of the research. It is often useful to review the assumptions with the consumer before the project is begun. The interpretation and implications of the results of a project are typically influenced by the assumptions involved. An understanding of and selection from among alternative assumptions before the project is begun can help ensure that the eventual results are interpreted properly and that implications are derived appropriately.

Communication of the findings of institutional research takes a variety of forms. Oral reports, in person or on the phone, are made to answer generally straightforward questions. A table or two or a display of data in a chart or graph may constitute a sufficient report. Letters or memoranda are used as brief reports which do not merit or require general distribution. Written reports, including tables and, perhaps, graphs and charts, are produced for many projects. The audiences for reports of institutional research are typically administrators who often are served best by a concise report—an executive summary—which emphasizes the results and, perhaps, implications of the project. However, because faculty members are often consumers of institutional research and because administrators have faculty backgrounds and perspectives, it is well to have a complete report in the file for use in answering questions of detail which may be raised. The more complete report includes relationships to previous research and a description of the methodology in sufficient detail that the study could be replicated. It is written as though intended for publication to serve an audience of other researchers.

A consideration of the content of an institutional research report may illuminate the nature of the activity and the manner in which it aids planning, policy formulation, and decision making. As already noted, institutional research consists of analysis which results in information. Data analysis yields *results*, generally quantitative, which constitute what may be considered an initial level of information. Results are, of course, included in

the report. A next level of information may be added by means of an analysis of the results in the context of the purpose of the research, the assumptions used, and other factors. This analysis constitutes the *interpretation* of the research and adds meaning to the results. The analysis of the interpretations in the context of the institutional environment may produce *implications*. A final stage of analysis may result in *recommendations*. The extent to which this sequence of analysis applies to individual projects, of course, varies. The point is that the sequence represents movement from analyses which are clearly institutional research toward analyses which are characteristic of planning, policy formulation, and decision making. At each step, additional considerations are brought to bear. As the new considerations begin to depart from those of fact and evidence, the analysis loses characteristics of research. Certainly the researcher should illuminate the subject of the research to whatever degree the evidence and the researcher's experience and expertise permit. At the same time, the distinction between the roles of the researcher and the decision maker needs to be maintained.

While written reports are important products of institutional research, it is often desirable to attempt to ensure that research undertaken is relevant and research completed is useful. Some institutional research offices draw upon advisory committees or upon networks of users of research to ensure that the projects undertaken are relevant to the issues faced by the college or university. After a report is written and distributed, the contribution it makes often can be increased by some follow-up technique designed to ensure that the research results are understood correctly and interpreted appropriately.

There are several general forms of, or approaches to, institutional research which deserve special attention because, even though they are not unique to institutional research, they are used frequently.

First, the conversion of data in the institution's operational data processing systems into *management information* is frequently a responsibility of the office of institutional research. The activity undertaken to fulfill this responsibility is not guided by a specific research purpose in the sense of a plan to be prepared, a policy to be established, or a decision to be made. Rather, the purpose is to develop a set of data which provides a meaningful picture of the institution and its operation. One product may be a set of summary reports which is prepared regularly and consistently and which, consequently, reveals trends in key institutional characteristics. Another product is a data base from which ad hoc analyses may be produced on demand and with relative ease. Computer technology has enabled the development of such management information systems. This technology allows not only the accumulation of consistent subtotals (by department) and totals (for the institution) of various types of data describing students, courses, employees, finances, and facilities, but by combining the various types of data, it also allows reports of, for example, student credit hours per full-time-equivalent faculty member, expenditures per student, and square feet of space per student contact hour. By taking advantage of the capability of the computer to store, retrieve, and manipulate data, a variety of types of

information descriptive of the institution and its functioning can be produced. Offices of institutional research are involved, sometimes centrally, in the development and operation of computer information systems because information is the goal of the system and because the office of institutional research is expected to possess expertise in bringing data and information to bear on issues in planning, policy formulation, and decision making, especially with respect to those issues which cross the boundaries of the traditional administrative areas.

Another common technique of institutional research is *comparative analysis*. Quantitative descriptions are given meaning by comparison. Several bases of comparison may be used. One basis is the comparable prior year value or the trend for a series of prior years. For example, meaning is added to an average class size of 36 for the history department by comparing this average to the averages for past years. A second basis is comparison with similar units. For example, how does the average class size for the history department compare with the averages for the sociology and economics departments?

The basis of comparison may be some predetermined standard. Using such considerations as the student demand for history courses, the educationally desirable size of classes for different courses, and teaching-load policy, it may have been established that the average size of the introductory courses should be 50 and of advanced courses 20, for an overall average size of 32. The actual size of 36, then, will exceed the standard. Other institutions provide yet another basis for comparison. How does the figure 36 compare with the average class sizes (calculated the same way) for the history departments of other (comparable) colleges or universities?

Data exchange is a practice of institutional research which provides the data required to make comparisons with other colleges or universities. The normal procedure is for a group of peer institutions to agree upon sets of data to be exchanged and the schedule for the exchange activities. Several approaches are used. At one extreme, fully analyzed data (e.g., unit cost or student-credit-hours-per-faculty-appointment ratios) are exchanged. At the other extreme, more basic data are exchanged in formats which permit each participating institution to conduct analyses in a manner tailored to local conventions, analytical procedures, and needs. Data exchanges which lead to peer institution comparisons are frequently undertaken by public colleges and universities in order to generate information for use in supporting requests for state appropriations. A second purpose is to provide information to enlighten institutional planning, policy formulation, and decision making.

Modeling is employed in institutional analysis. It involves the specification of mathematical relationships among variables of institutional operation. Parameters of the mathematical relationships are derived from historical data and are used to project variables of the model for future years. By varying values of model parameters, which reflect assumptions about future relationships, answers to "what-if" questions may be derived. (The

testing of alternate assumptions in this manner may be viewed as another form of comparative analysis.) Enrollment projections are developed using enrollment and student-flow models. There are faculty-flow models which are used to project numbers of faculty in various categories, particularly numbers on tenure, and there are elaborate cost projection models. It is not unusual to find that the most difficult step in applying the simulation-model technique is the development of the required (consistently defined and developed) historical or base-line data.

A concern with *data definition* underlies almost all varieties of institutional research because the information resulting from analyzed data of any type can be only as meaningful as the definitions underlying the original data and the degree to which the definitions are observed in assembling the data. The involvement of persons responsible for institutional research in the development of management information systems occurs, at least in part, because of the importance of definitions underlying management information. Agreement on and use of data definitions is a central concern in data exchange efforts and in all other forms of comparative analysis. The term "comparison" implies careful attention to data compatibility and comparability which are assured only by sound and complete definitions.

Contributions of Institutional Research to Planning, Decision Making, and Policy Formulation

The range and variety of problems, questions, and issues which arise in higher education and for which institutional research is relevant defy categorization or enumeration. Any administrator and any committee may call upon institutional research to inform plans, decisions, and actions. In many cases the researcher can aid in specifying the information to be brought to bear on a problem or issue and, for this reason, should be included at an early stage. The breadth of the potential applicability of institutional research is indicated by the following illustrations.

Institutional research can aid in determining how the institution's several publics perceive its missions and goals and in specifying new or altered missions, goals, and objectives. It can assist in relating peformance to goals by assessing institutional outcomes and accomplishments, can point to areas in which performance does not appear to meet expectations, and can suggest strategies for improvement. Institutional research can facilitate institutional self-study and accreditation processes and can contribute evidence that the college or university is accountable for its use of resources and performance.

Institutional research can contribute to program planning and development by means of market research and needs assessment. It can support intensive reviews of programs or departments by providing relevant factual evidence and by summarizing qualitative information. It can illuminate reviews and revisions of curricula by producing information on students' course-selection behavior. Institutional research can provide information relevant to questions about the grade-giving behavior of faculty

and the grade-earning behavior of students; such questions may arise from concerns about standards or about equity with students.

Institutional research underlies the improvement of instruction. Procedures and specific instruments used in the evaluation of instruction, such as student rating-of-instruction forms, are selected or developed by means of research. The evaluation of instructional methods and media is a process designed to lead to improvement and is guided by evidence of research.

Institutional research can assist in identifying inefficiencies in instructional activities and in the allocation of resources. Data on class sizes, teaching loads, and student-credit-hour productivity, on the incidence of small classes, and on the frequency of offering of individual courses are made available to academic administrators.

The admissions program can benefit from institutional research. Criteria for admissions can derive from relationships between measures of student ability and success in programs. Data on sources of students and the "yields" of alternative strategies of admissions officers and others can assist in tailoring the admissions program to the mission and goals of the college or university and of specific programs.

Institutional research not only can provide enrollment projections but also can provide analyses of enrollment trends and relationships which guide enrollment policy and suggest assumptions and strategies for enrollment planning. Data describing the student body can be related to enrollment goals. Data on retention and attrition can reveal problems. Institutional research on causes of attrition and on strategies for increasing retention can contribute to maximizing society's investment in education.

Institutional research can support efforts to provide education to special types of students by assessing their preferences, predispositions, and academic behavior. In what regards do part-time students, minority-group students, women students, especially able students, handicapped students, older students, and others differ from the traditional student in ways which have implications for the achievement of the educational goals of such students and of the college or university? The students' program, course, and scheduling behavior can be summarized, and attempts to achieve student and institutional goals can be evaluated.

Institutional research can assist with initiatives intended to foster access to the educational opportunities offered by the college or university and can contribute to attempts to ensure that the applicant's choice of the institution is an informed one. Institutional research can assist in developing the consumer information which should be available to prospective students. The financial affairs of students can be determined and used as consumer information as well as referents for the determination of financial aid programs and policies. The effectiveness of the program of financial aids in achieving the goals set for this program can be evaluated and the evaluation may lead to improved use of financial aid resources. Equal opportunity and affirmative action goals are established with the aid of information and data are used to assess progress toward the goals.

Similarly, institutional research can be applied in the evaluation and

improvement of such programs as academic advising, counseling, career planning, placement, health services, and housing.

Questions about faculty workload and considerations of policy pertaining to it can be illuminated by institutional research. Current workload patterns can be measured. Faculty preferences regarding workloads can be surveyed. Implications of alternate workload policies or patterns can be estimated.

The faculty-related problems which are being forecast as a result of steady-state or declining enrollment can be the subject of institutional research. Promotion and tenure practices and rates can be displayed and analyzed, and a faculty-flow model can be used to project the effects of alternate assumptions or policies on numbers and characteristics of the faculty at points in the future. Characteristics and preferences of faculty members, described by institutional research, can be useful in planning programs of faculty development. Issues involved in the appraisal of faculty performance—whether arising from goals of faculty development or from questions about promotion, tenure, and salary policies and procedures—can be subjects for institutional research. Information which is the subject of collective bargaining, where it exists, is assembled by institutional research.

The processes involved in resource acquisition and allocation rely on institutional research. Budgets are analyzed in the contexts of goals, priorities, workload, and performance. Income and expenditure projections are made to guide budget planning. Costs analyses are carried out in support of various responsibilities of governance.

The establishment of salary and compensation goals, policies, and guidelines can be informed by institutional research. Investigations of equity in the salaries of faculty and of administrators and support staff draw upon a wide array of variables.

Institutional research can aid in the formulation of policies, structures, and rates for student tuition and fees. Enrollment projections can be translated into projections of tuition and fee income.

Facilities planning, allocation, and management is guided by institutional research. The inventory of buildings and rooms is maintained. Utilization of classrooms and other types of space is measured and compared with standards to guide reallocation decisions. Assessments of the condition, suitability, and utilization of existing facilities combine with the requirements of programs to produce plans for maintenance, rehabilitation, remodeling, and new building. Energy use and conservation are relatively new areas of study which have obvious applicability to problems facing colleges and universities.

Institutional research alone cannot lead to sound plans, appropriate policies, or correct decisions for the college or university. The wisdom, integrity, and courage possessed by those who share the responsibilities of governance are the principal determinants of the soundness of plans, the appropriateness of policies, and the correctness of decisions. Institutional research *can*, however, provide data and information which contribute to

and, in some instances, are essential in maintaining the quality of governance expected of an institution whose existence is based upon principles of wisdom and truth.

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*These publications are available through the Association for Institutional Research, 314 Stone Building, Florida State University, Tallahassee, FL 32306 (if still in print) or through the ERIC system.